

Appl. S.N. 10/063,845
Amdt. Dated April 14, 2004
Reply to Examiner's Telephone Call of April 8, 2004

GE Docket 122016

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A radio frequency (RF) coil array assembly for use in a magnetic resonance imaging (MRI) system comprising:

a plurality of RF coils arranged in a configuration for transmitting in parallel during the transmission mode of the MRI system; and,

~~a plurality of corresponding RF amplifiers each coupled to a corresponding coil, adapted to generating controlled currents in the coils and wherein the controlled currents being for defining and steering an excitation volume of an examined subject within the MRI system;~~

a plurality of corresponding RF amplifiers each coupled to a corresponding coil and generating controlled currents in the coils, the currents each being controlled by a RF pulse waveform designed along with gradient waveforms, the waveforms being designed to effect shorter time-span excitation k-space traversing by means of reducing excitation k-space sampling density and wherein the controlled currents being define and steer an excitation volume of an examined subject within the MRI system.

2. (currently amended) The RF transmit coil array assembly of claim 1 wherein the RF coils are arranged in a linear pattern.

3. (currently amended) The RF transmit coil array assembly of claim 1 wherein the RF coils are arranged in a substantially even distribution about the object.

4. (currently amended) The RF transmit coil array assembly of claim 3 wherein the RF coils are further arranged in a substantially circular pattern about the object.

5. (cancelled)

6. (cancelled)

7. (currently amended) The RF transmit coil array assembly of claim 6 1 wherein ~~the design is comprised of computing waveforms based on the desired shape and location of an excitation volume as profiles of the component coils' RF fields~~ the RF pulse waveforms are computed based on a desired shape and location of an excitation volume as well as RF field profiles of the RF coils.

8. (currently amended) A method for magnetic resonance imaging (MRI) with multiple transmit coils, the method comprising:

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exciting a portion of an examined subject with the multiple transmit coils configured for parallel excitation;

~~controlling respective currents in the multiple transmit coils to excite a selected portion of the subject; and~~

~~receiving magnetic resonance signals to generate an image corresponding to the selected portion of the object.~~

controlling respective currents in the multiple transmit coils to define and steer an excitation volume of a selected portion of the object, wherein the respective currents are each controlled by a RF pulse waveform designed to effect shorter time-span excitation k-space traversing by means of reducing excitation k-space sampling; and,

receiving magnetic resonance (MR) signals from at least one RF coil adapted to receive signals to generate an image corresponding to the selected portion of the object.

9. (cancelled)

10. (cancelled)

11. (currently amended) The method of claim 8 ~~wherein the step of receiving comprises receiving magnetic resonance (MR) signals from where the~~ at least one radio frequency (RF) coil adapted to receive signals for generating images corresponding to the selected portion of the object is a separate from than the multiple transmit coils.

12. (currently amended) The method of claim ~~8~~ 11 wherein the ~~step of receiving comprises receiving magnetic resonance (MR) signals from the~~ at least one RF coil comprises a body coil or a surface coil.

13. (currently amended) The method of claim ~~8~~ 11 wherein the ~~step of receiving comprises receiving magnetic resonance (MR) signals from the~~ at least one RF coil comprises a MRI phased-array.

14. (currently amended) The method of claim 8, wherein the multiple transmit coils are used during a the transmission mode and is further used as the at least one RF coil to receive signal during a the receive mode.

15. (cancelled)

16. (cancelled)